



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,517	12/07/2001	Moses S. Joseph	PA2328US	8765
7590	10/18/2005		EXAMINER	
Moses Joseph, Anila Fund 400 Channing Avenue Palo Alto, CA 94301				CHO, HONG SOL
			ART UNIT	PAPER NUMBER
			2662	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/020,517	JOSEPH ET AL.
<b>Examiner</b>	<b>Art Unit</b>	
Hong Cho	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 13 November 2001.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-17,26-42,44-55 and 59-68 is/are rejected.
- 7) Claim(s) 18-25,43 and 56-58 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 07 December 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____ .  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____.  | 6) <input type="checkbox"/> Other: _____ .                                  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 1-17, 26-42, 44-55, and 59-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sikora et al (USPUB 20020064190), hereinafter referred to as Sikora in view of Chawla et al (USPUB 20050128951), hereinafter referred to as Chawla and further in view of Bronte et al (US 5621720), hereinafter referred to as Bronte.

Re claims 1, 26, and 44, Sikora discloses aggregating multiple information channels across a network between a premises service unit (PSU) at a user's site and a service gateway (SG) at an Internet service provider by implementing a trunking protocol transparent to layer one and layer two of the network layer hierarchy using packet encapsulation and fragmentation (abstract). Sikora fails to disclose implementing a packet scheduling algorithm for distributing packets across the information channels being aggregated and implementing an information channel aggregation controller for controlling the information channels being aggregated. Chawla discloses the packet

scheduler for distributing packets (*distributing packets across the information channels being aggregated*, paragraph [0010], lines 9-13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sikora to implement the packet scheduler of Chawla to properly service the queues in the data queuing mechanism to achieve the promised QoS for each stream. Bronte discloses monitoring the multiplexed channels (*an information channel aggregation controller for controlling the information channels being aggregated*, column 5, lines 12-16). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sikora to implement monitoring means of Bronte for identifying degradation of service before a service-affecting outage occurs by continuously monitoring the performance of all channels of high speed communications network.

Re claims 2-7, 27—32, and 45-50, Sikora discloses the information channels comprising standard modem connections or DSL lines, or T1 lines, or T3 lines, or a combination of two or more of standard modem connections, DSL lines, T1 lines, T3 lines, and other layer one and layer two technologies (claims 2-7).

Re claims 8, 9, 33, 34, 51, and 52, Sikora discloses all of the limitations of the base claim, but fails to disclose layer one of the network layer hierarchy comprising the physical layer of the OSI reference model and layer two of the network layer hierarchy comprising the data link layer of the OSI reference model. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sikora to be compatible with the two lower layers of OSI reference model for utilizing networking industry standard.

Re claims 10, 35, and 62, Sikora discloses the trunking module comprising a packet encapsulation module routine, a packet fragmentation routine and a packet order preservation routine (paragraph [0006], lines 15-19).

Re claims 11, 36, and 63, Sikora discloses the packet encapsulation routine comprising either one or both of software or logic for generating a trunking protocol header and inserting the trunking protocol header in a packet (paragraph [0036], line 6).

Re claims 12, 37, 54, 60, and 64, Sikora discloses the trunking protocol header comprising a sequence number and a plurality of fields compliant with the Internet protocol (figure 2; paragraph [0032]).

Re claims 13, 38, and 65, Sikora discloses the packet fragmentation routine comprising either one or both of software and logic for fragmenting a packet formed by the Internet protocol into smaller packet fragments so that the transmission rate of the aggregated information channels is optimized (figure 3a; paragraph [0035]).

Re claims 14, 39, and 66, Sikora discloses either one or both of software or logic for fragmenting a packet formed by the Internet protocol into smaller packet fragments comprising either one or both of software and logic for inserting a layer four protocol header and an Internet protocol header into a single packet fragment and either one or both of software and logic for inserting the trunking protocol header into all packet fragments (figure 3a; paragraph [0035]).

Re claims 15, 40, and 67, Sikora discloses layer four comprising the transport layer of the OSI reference model (paragraph [0005]).

Re claims 16, 41, and 68, Sikora discloses identifying packets that have been lost (*identifying out-of-sequence packets*) or delayed (*monitoring the delay of packets*) and a buffer for packets that are not received in sequence until the delayed packet arrives (*a buffer for storing out-of-sequence packets and ordering the out-of-sequence packets*, paragraph [0033]).

Re claims 17, 42, 55, and 61, Sikora discloses all of the limitations of the base claim, but fails to disclose creating packet traffic queues, checking the length of the packet traffic queues, and sending a packet to the shortest length packet queue. Chawla discloses having many prioritized queues and directing a packet to a queue (paragraph [0010]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sikora to implement the packet traffic queue of Chawla to properly service the incoming packets to achieve the promised QoS for each stream. Chawla fails to disclose checking the length of the packet traffic queues and sending a packet to the shortest length packet queue. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the classifier of Chawla to queue the data to the shortest length packet queue after checking the length of the packet traffic queues. The motivation is to have load balancing performed among queues for efficient service of incoming packets.

Re claims 53 and 59, Sikora discloses a packet encapsulation module routine, a packet fragmentation routine and a packet order preservation routine (paragraph [0006], lines 15-19), generating a trunking protocol header and inserting the trunking protocol header in a packet (paragraph [0036], line 6). Sikora discloses the packet fragmentation

routine comprising either one or both of software and logic for fragmenting a packet formed by the Internet protocol into smaller packet fragments so that the transmission rate of the aggregated information channels is optimized (figure 3a; paragraph [0035]). Sikora fails to disclose implementing a packet scheduling algorithm for distributing packets across the information channels being aggregated and implementing an information channel aggregation controller for controlling the information channels being aggregated. Chawla discloses the packet scheduler for distributing packets (*distributing packets across the information channels being aggregated*, paragraph [0010], lines 9-13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sikora to implement the packet scheduler of Chawla to properly service the queues in the data queuing mechanism to achieve the promised QoS for each stream. Bronte discloses monitoring the multiplexed channels (*an information channel aggregation controller for controlling the information channels being aggregated*, column 5, lines 12-16). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sikora to implement monitoring means of Bronte for identifying degradation of service before a service-affecting outage occurs by continuously monitoring the performance of all channels of high speed communications network.

***Allowable Subject Matter***

3. Claims 18-25, 43, 56-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement for reasons for allowance.

4. Claims 18 and 56 are allowable over the prior art of record since the cited references taken individually or in combination fail to particularly teach or fairly suggest aggregating multiple information channels across a network by the information channel aggregation controller modules comprising a configuration maintenance routine, an auto discovery of active lines routine, an error monitoring and recovery routine, and a maintenance of aggregation groups routine.

Claim 43 is allowable over the prior art of record since the cited references taken individually or in combination fail to particularly teach or fairly suggest controlling the information channels being aggregated by managing configuration information associated with the information channels, monitoring the configuration information associated with the information channels to reveal the information channels that are active, monitoring network failures in the information channels, modifying the configuration information associated with the information channels experiencing network failures to indicate that the information channels experiencing network failures are non-active, forming aggregation groups comprising a subset or all of the information channels being aggregated, adding information channels to the aggregation groups, and removing information channels from the aggregation groups.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US Patent (5459731) to Brief et al
- US Patent (5621720) to Bronte et al

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Cho whose telephone number is 571-272-3087.

The examiner can normally be reached on Mon-Fri during 7 am to 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3088.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

hc  
Hong Cho  
Patent Examiner  
10/12/2005

  
JOHN PEZZLO  
PRIMARY EXAMINER